



STATE OF MICHIGAN
OFFICE OF THE GOVERNOR
LANSING

JOHN ENGLER
GOVERNOR

October 10, 2001

Dear Media Representative:

In Michigan, fierce storms that occur during the winter months can create blizzard conditions—blinding wind-driven snow, severe drifting, and dangerous wind chill—all of which can be hazardous to Michigan residents and pose serious travel risks. Overall, winter storms can immobilize a region, disrupt utilities and commerce, and even cause flooding.

A snowstorm left many Michigan counties with record or near-record snowfall in December 2000. The storm closed highways, schools and businesses throughout the state. This event resulted in a federal emergency declaration for 41 counties, with over \$12 million being provided by the federal government and the State of Michigan to help the communities recover from the storm.

In an effort to increase awareness about winter hazards, I have declared the week of November 4-10, 2001, as Winter Hazards Awareness Week in Michigan. The Michigan Committee for Severe Weather Awareness has created a safety information campaign to encourage Michigan residents to prepare for the hazards of Michigan winter weather.

The information is for your use during Winter Hazards Awareness Week, as well as in the future should a winter storm occur in your area. Your assistance in distributing this information to the public is appreciated. This effort helps Michigan citizens prepare themselves and their families to minimize the loss of life and destruction of property that often occurs during a severe winter storm.

I encourage you to contact any of the Committee members or your local representatives from the National Weather Service, Emergency Management, or American Red Cross offices for more information about winter safety in Michigan.

Sincerely,

A handwritten signature of John Engler in dark ink, written in a cursive style.

John Engler
Governor

STATE OF MICHIGAN



Executive
Office

John Engler
Governor

EXECUTIVE DECLARATION

Governor John Engler
Hereby issues this Executive Declaration
in Observance of

November 4 - 10, 2001

as

WINTER HAZARDS AWARENESS WEEK

WHEREAS, each year in our Great Lakes State, countless people are injured or suffer property damage due to winter storms that bring extreme cold, freezing rain, ice, and snow; and

WHEREAS, Michigan citizens encounter winter hazards such as icy roads, overexposure, and frostbite from extremely cold temperatures, over exertion from snow removal, and isolation within their own homes due to heavy snowfalls; and

WHEREAS, the use of wood and kerosene as alternative heating methods greatly increases the probability of residential fires; and

WHEREAS, inclement winter weather requires that drivers take extra precautions to insure that they reach their destinations safely; and

WHEREAS, the "Michigan Committee for Severe Weather Awareness" and other emergency management officials, in conjunction with the news media, are cooperating to educate the public about these hazards and how to prepare for them;

NOW, THEREFORE, I, John Engler, Governor of the State of Michigan, do hereby declare November 4 - 10, 2001, as WINTER HAZARDS AWARENESS WEEK in Michigan, and I urge all citizens to learn more about protecting themselves, their families, and homes during the winter season.



Given under my hand on this twenty-first day of
September in the year of our Lord two thousand and
one and of the Commonwealth one hundred and
sixty-four.

A handwritten signature of John Engler in cursive script.

Governor

Michigan Committee for Severe Weather Awareness
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For Immediate Release

WINTER HAZARDS AWARENESS WEEK
IS NOVEMBER 4 - 10, 2001

To focus attention on winter safety precautions, Governor John Engler has declared November 4 - 10, 2001, as Winter Hazards Awareness Week in Michigan.

Heavy snow, extreme cold, ice, and wind routinely affect Michigan during winter and, individually or together, pose dangers to life and property. However, Michigan residents must remember that it does not necessarily take record-breaking low temperatures or mountains of snow to make winter in Michigan dangerous. Abrupt changes in weather that take place in winter are enough to turn enjoyment of the season's enjoyment into tragedy.

A significant lake-enhanced snow event affected areas along Lakes Superior and Michigan between November 19 - 22, 2000. In southwest Michigan, snowfall amounts of up to 30 inches occurred, and the 24-hour snowfall record was set for the month of November at Grand Rapids when 11.5 inches fell on the 20th. In Upper Michigan, snowfall totals during this period reached 24 inches in Marquette, 23 inches at Melstrand in Alger County, and 19 inches at Munising and Ironwood. Many schools and some businesses in the Lake Superior snowbelts closed at some point during these 4 days.

In southern Michigan, December, 2000, will be memorable for the frequency and strength of winter storms. Most notably, the winter storm of December 11 - 12 resulted in closed highways, schools, and businesses. Widespread amounts of 10 to 18 inches occurred as this storm moved through the state. This storm system resulted in the heaviest 24 hour snowfall on record for Grand Rapids in the month of December when 15.1 inches fell during a 24 hour period ending on the 12th. In Flint, the 14 inches that fell during the storm was the third highest snowfall total on record there.

Through the rest of December, bouts of snow continued. By the end of the month, a whopping 88 inches of snow was observed in Benton Harbor. Grand Rapids recorded 59.2 inches of snow, the most snow recorded in any month since records began back in 1893. Flint and Saginaw, with 35.3 and 40.3 inches of snow, respectively, also set all-time snowfall records for any month. Detroit would end the month with 25.1 inches of snow, making December 2000, the third snowiest December on record there, dating back to 1870. The combination of snow and extreme cold in December, 2000, resulted in over 2.6 million in damage in southeast Michigan alone to due roof collapses and ruptured pipes.

- more -

Other parts of Michigan encountered significant snows as well, courtesy of cold air and lake effect. Some places in the lake-effect snowbelts of Upper Michigan saw their greatest December snow totals ever, including 133.7 inches at the Keweenaw County Road Commission. The old record there was 129.3 inches, set in 1989.

In early February, more lake-effect snow in Upper Michigan from the 8th through the 10th provided for 24 inches in Laurium in Houghton County, and in the wake of the storm on the 10th, north winds gusting to 40 mph caused near blizzard conditions. Later in February, on the 19th, a man in Sanilac County, who was driving about two miles from his home, went off the road and into a ditch with his vehicle. With no heavy coat, the man attempted to walk home. Unfortunately, he collapsed and died of hypothermia about a half-mile from the truck. Snowfall totals for the winter were extreme in parts of Michigan. With a total of 194.8 inches, Newberry in Luce County broke its old seasonal snowfall record of 187.5 inches set during the 1976-77 winter. In Marquette, the total of 268.0 inches came in just a few inches short of the previous record of 272.2 inches set during the winter of 1996-97. Rockland in Ontonagon County recorded 333.5 inches of snow.

"Always prepare for nature's wrath during the winter. Stay tuned to the latest forecasts. There is no need to be caught by surprise no matter how winter tries to sneak up on us," said Mark Wesley of the Michigan State Police Emergency Management Division. No matter what the winter weather hazard--from extreme cold and snow to ice and wind--everyone in Michigan should be prepared for winter's dangers. Winter storms can immobilize a region, disrupt utilities, and even cause flooding.

The Severe Weather coalition suggests keeping emergency supplies in the home and motor vehicle. Those supplies should include first-aid kits, battery-powered radios, flashlights, extra batteries, matches, blankets, warm clothes and non-perishable foods. Problems while traveling can be avoided by keeping vehicles properly maintained and filled with fuel. Residents should always check the weather forecast before leaving home and take note of advisories, watches and warnings.

If residents have to go outside during severe winter weather, they should wear loose-fitting, light-weight clothing in layers. Outer garments should be tightly woven and water repellent, and they should wear a wool hat and mittens. It is important to avoid overexertion, such as shoveling heavy snow, pushing a car or walking in deep snow. Sweating from these activities could lead to wind chill and hypothermia.

During the winter, motorists should take extra precautions on the roads. First, motorists should clear ice and snow from windows, mirrors, hoods, roofs, headlights, taillights, and trucks. Drivers should slow down when the visibility and road conditions are bad. Remember that if you have anti-lock brakes, you should apply steady pressure--never pump the brakes.



Winter's Impact

In the Midwest and Plains, storms tend to develop over southeast Colorado in the lee of the Rockies. These storms move east or northeast and use both the southward plunge of cold air from Canada and the northward flow of moisture from the Gulf of Mexico to produce heavy snow and sometimes blizzard conditions. Wind and cold sometimes combine to cause wind chill temperatures as low as 50F below zero. The wind crosses the lakes, tapping its moisture and forming snow squalls and narrow heavy snow bands. This is called "lake-effect snow."

Storms with Strong Winds

Sometimes winter storms are accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, severe drifting, and dangerous wind chill. Strong winds with these intense storms and cold fronts can knock down trees, utility poles, and power lines. Storms near the coast can cause coastal flooding and beach erosion as well as sink ships at sea.

Extreme Cold

Extreme cold often accompanies a winter storm or is left in its wake. Prolonged exposure to the cold can cause frostbite or hypothermia and become life threatening. Infants and elderly people are most susceptible. What constitutes extreme cold and its effect varies across different areas of the United States. In areas of the South unaccustomed to winter weather, freezing temperatures can cause severe damage to citrus fruit crops and other vegetation. Pipes may freeze and burst in homes that are poorly insulated or without heat. In the north, long cold spells can cause rivers to freeze, disrupting shipping. Ice jams may form and lead to flooding.

Ice Jams

An ice jam can occur anytime from early winter to late spring in Michigan, depending upon changes in temperatures that cause alternate freezing and melting of water surfaces. The most likely times are early winter before the surfaces are completely frozen and early spring when the ice cover begins to break up due to melting. The water held back can cause flooding upstream, and if the ice jam suddenly breaks, flash flooding can then occur downstream as well.

Ice Storms

Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians.

Heavy Snow Storms

Heavy snow can immobilize a region and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. Accumulations of snow can collapse buildings and knock down trees and power lines. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. The cost of snow removal, repairing damages, and loss of business can have large economic impacts on cities and towns.

Sleet

Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects. However, it can accumulate like snow and cause a hazard to motorists.

Freezing Rain

Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coating or glaze of ice. Even small accumulations of ice can cause a significant hazard.



Winter Storm Facts

What Makes a Winter Storm?

COLD AIR: below freezing temperatures in the clouds and near the ground are necessary to make snow and/or ice.

MOISTURE: to form clouds and precipitation. Air blowing across a body of water, such as a large lake or the ocean, is an excellent source of moisture.

LIFT: something to raise the moist air to form the clouds and cause precipitation. An example of lift is warm air colliding with cold air and being forced to rise over the cold dome. The boundary between the warm and cold air masses is called a front. Another example of lift is air flowing up a mountainside.



**WINTER STORMS ARE CONSIDERED
DECEPTIVE KILLERS.....BECAUSE MOST
DEATHS ARE INDIRECTLY RELATED TO THE
STORM**



People die in traffic accidents on icy roads.

People die of hypothermia from prolonged exposure to cold.

Everyone is potentially at risk during winter storms. The actual threat to you depends on your specific situation. Recent observations indicate the following:

Related to ice and snow:

- About 70% occur in automobiles.
- About 25% are people caught out in the storm.
- Majority are males over 40 years old.

Related to exposure to cold:

- 50% are people over 60 years old.
- Over 75% are males.
- About 20% occur in the home.

Winter Safety Tips



PREPARING FOR A WINTER STORM

At home:

- Keep handy a battery-powered flashlight, radio, extra food (canned or dried food is best) and bottled water.
- Make sure there are extra blankets and heavy clothes available.
- Be aware of potential fire and carbon monoxide hazards if you plan to use an emergency heating source such as a fireplace, wood stove or space heater.

In a vehicle:

- Have the following emergency supplies in your auto: shovel, blankets, windshield scraper, container of sand, battery booster cables, tow chain or rope, flashlight, battery-operated radio, first-aid kit and high energy snacks (i.e.: nuts, raisins).

Outside:

- Avoid overexertion, such as shoveling heavy snow, pushing a car, or walking in deep snow. Sweating could lead to chill and hypothermia.
- Wear loose-fitting, lightweight warm clothing in layers. Wear wool hat and mittens.
- Keep your clothes dry. Change wet socks and clothing quickly to prevent loss of body heat.

DURING A WINTER STORM

At home:

- To save heat, close off unneeded rooms, cover windows at night and stuff towels or rags in cracks under doors.
- Maintain adequate food and water intake. Food provides the body with energy for producing its own heat.

If stranded in a vehicle:

- Attach a cloth to your antenna to attract attention and then remain in the vehicle.
- Run the motor about 10 minutes each hour for heat. However, open the window slightly for fresh air and make sure that the exhaust pipe isn't blocked.
- Get attention by turning on the dome light and emergency flashers when running the engine.
- Exercise by moving arms, legs, fingers and toes to keep blood circulating and to keep warm.

If stranded outside:

- Try to stay dry and cover all exposed parts of the body.
- Prepare a windbreak or snow cave for protection from the wind. Building a fire for heat and to attract attention.
- Do not eat snow. It will lower your body temperature. Melt it first.

ANYTIME

Listen for NOAA Weather Radio or local radio, television and cable stations for the latest updates on hazardous winter weather.

- To insure a continuous flow of weather information, make sure the NOAA Weather Radio, or another radio or television has a battery back up.
- For NOAA Weather Radio information, including a station near you, see the NOAA Weather Radio page on the internet at <http://www.nws.noaa.gov/nwr> or contact your National Weather Service office.

For more information on winter storms, see <http://www.nws.noaa.gov/om/nwspub.htm>



Winter Hazards FAQs

On average, a major winter storm hits part of Michigan at least once per month between October and April. Since 1970, more than 50 persons have died as a direct result of severe winter weather. This is in addition to victims of auto accidents due to slippery roads and those who suffer heart attacks while shoveling snow. The following are frequently asked questions about winter weather.

1. What is wind chill?

Wind chill is the perceived temperature resulting from the effect of wind, in combination with cold air, which increases the rate of heat loss from the human body.

2. What is frostbite and what can you do to treat it?

Frostbite is damage to body tissue caused by that tissue being frozen. Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes, or the tip of the nose. Frostbite varies in severity from frostnip to deep frostbite, depending on the length of exposure, temperature to which the skin is exposed and wind speed. For frostnip, place firm, steady pressure from a warm hand against the area. Also, blow on the surface holding the frostnipped area against the body. Do not rub the area, apply snow or plunge it into very hot or cold water. Victims of severe frostbite must receive prompt medical attention.

3. What is hypothermia and what are the warning signs?

Hypothermia occurs when the body temperature drops to 95 degrees F. or lower. It can develop whenever body heat loss exceeds heat gain. Hypothermia is not exclusive to winter. It can occur during the wind and rain of spring and summer. Hypothermia is often mistaken for fatigue, irritability, or dehydration and may include some of these signs: abnormal decision making; improper response to cold; apathy, lethargy; decreased cooperation; slurred speech; disorientation; shivering; stumbling; and stiffness progressing to inability to move.

4. How do you treat hypothermia?

Mild to moderate hypothermia (body temperature greater than 90 degreeF., conscious, shivering, able to walk)

- Prevent further heat loss. Dry, remove from cold and insulate.
- Rewarm by warming the body core first. Rehydrate with warm broth.
- Seek medical attention.

Severe hypothermia (body temperature less than 90 degree F., unconscious, not shivering)

- Evacuate to rewarm.
- Prevent further heat loss.
- Seek immediate medical attention.

5. What are the various winter weather warnings and advisories?

- A **winter storm watch** indicates that severe winter weather conditions may affect your area.
- A **winter storm warning** indicates that severe winter conditions are imminent.
- A **winter storm warning** for heavy snow indicates snowfalls of at least 6 inches in 12 hours or 8 inches in a 24-hour period are expected. In the Upper Peninsula, it indicates 8 or more inches in 12 hours and 10 or more inches in a 24-hour period.
- **Blizzard warnings** are issued when sustained wind speeds or frequent gusts of at least 35 miles per hour are accompanied by considerable falling and/or blowing snow. Visibility is greatly reduced during a blizzard.
- **Snow advisories** are issued when snowfalls of 4 to 5 inches are expected in a 12-hour period for the average of the forecast range. In the Upper Peninsula, it would result when 4 to 7 inches of snow are anticipated in that same time period.



Winter Weather Definitions

The following are some definitions of weather terms that sometimes appear in statements and forecasts issued by the National Weather Service during adverse winter weather.

Advisory: Issued by the National Weather Service to indicate that winter weather is expected to cause significant inconveniences and could become hazardous. If precautions are taken, these situations should not become life threatening. The greatest hazard is often to motorists, so it normally is advisable to avoid unnecessary travel or at least use extra caution and allow extra travel time.

Black Ice: Patches of solid clear ice that form on road surfaces and typically appear darker than nearby dry surfaces. Black ice often is a significant hazard to motorists.

Blizzard: A combination of wind and snow resulting in extremely hazardous weather. Technically, a blizzard must have sustained winds or frequent gusts over 35 mph and visibility frequently less than 1/4 mile in falling and/or blowing snow, along with life-threatening wind chills. These conditions must prevail for three hours or more before a winter storm becomes a blizzard.

Flurries: Light snow falling for short durations and resulting in little or no accumulation.

Freezing Rain: Liquid rain that falls into a layer of sub-freezing air near the ground, and therefore freezes on contact with objects that have cooled to below freezing. If the layer of cold air near the ground is deep enough or cold enough, the raindrops may freeze into ice pellets or sleet before reaching the ground.

Graupel: Same as snow pellets.

Heavy Snow (accumulation): Defined in Michigan as an accumulation of 6 inches or more in 12 hours, or 8 inches or more in 24 hours for lower Michigan, and 8 inches or more in 12 hours, or 10 inches or more in 24 hours in for upper Michigan.

Heavy Snow (observations): Falling snow that reduces the visibility to 1/4 mile or less.

Ice Pellets: Same as sleet.

Ice Storm: Heavy accumulations of ice resulting in significant structural damage, including downed tree limbs and/or utility lines. Significant disruption of travel can be expected.

Winter Weather Definitions



Light Snow: In weather observations this refers to falling snow in which visibility is $\frac{5}{8}$ of a mile or more. In forecasts it refers to a relatively steady fall of snow that generally results in light accumulations or none at all.

Moderate Snow: In weather observations this refers to falling snow that reduces the visibility to less than $\frac{5}{8}$ of a mile but more than $\frac{1}{4}$ mile.

Sleet: Pellets of ice resulting from raindrops falling into a layer of subfreezing air, and therefore freezing before reaching the ground. If the raindrops do not freeze before reaching the ground, they may freeze upon contact with the ground resulting in freezing rain.

Snow Grains : These are small, white particles of ice. They are similar to snow pellets except they are smaller and do not shatter or bounce when they hit a hard surface.

Snow Pellets: Precipitation consisting of white, opaque particles (unlike ice pellets or sleet, which normally are clear) that are typically round or conical in shape. They often resemble miniature snowballs, and unlike snow grains will normally bounce or break up when they fall on a hard surface. Also sometimes called graupel or tapioca snow.

Wind Chill: A measure of the combined effects of cold air and wind on exposed skin. As wind increases, heat is carried away from the body at a faster rate making it feel even colder. The wind chill temperature is the same as the air temperature as long as the wind speed is 3 mph or less. Otherwise, it is less than the air temperature.

Winter Storm Warning: Issued by the National Weather Service to indicate that hazardous and life-threatening winter weather, such as heavy snow or an ice storm, either is occurring, will soon begin, or has a very high probability of occurrence. Stay indoors unless absolutely necessary to go outside.

Winter Storm Watch: Issued by the National Weather Service to indicate that the risk of hazardous and life-threatening winter weather has increased significantly, but its occurrence, location, or timing are still uncertain. Begin preparations and listen for further information.

Wind Chill Guide



NEW WIND CHILL CHART NOW BEING USED!

In order for your body to work properly, its temperature needs to be around 98.6 degrees Fahrenheit. If cold causes your body temperature to drop below 95 degrees, your heart begins to slow, your body becomes weak and your mind becomes confused. This could place you in a life-threatening situation. That is why you should understand the hazards of wind chill.

The NWS is planning to implement a replacement Wind Chill Temperature (WCT) index for the 2001/2002 winter season. The reason for the change is to improve upon the current WCT Index used by the NWS and the Meteorological Services of Canada. The new WCT index will:

- Use wind speed calculated at the average height (5 feet) of the human body's face instead of 33 feet (the standard anemometer height)
- Be based on a human face model
- Incorporate modern heat transfer theory (heat loss from the body to its surroundings, during cold and breezy/windy days)
- Use a consistent standard for skin tissue resistance

For example: Assuming an air temperature of 5 degrees and a wind of 30 mph.
Old WCT = -41 New WCT = -18

New Wind Chill Chart
Wind (mph)

Calmm	5	10	15	20	25	30	35	40	45	50	55	60
40	36	34	32	30	29	28	28	27	26	26	25	25
35	31	27	25	24	23	22	21	20	19	19	18	17
30	25	21	19	17	16	15	14	13	12	12	11	10
25	19	15	13	11	9	8	7	6	5	4	4	3
20	13	9	6	4	3	1	0	-1	-2	-3	-3	-4
15	7	3	0	-2	-4	-5	-7	-8	-9	-10	-11	-11
10	1	-4	-7	-9	-11	-12	-14	-15	-16	-17	-18	-19
5	-5	-10	-13	-15	-17	-19	-21	-22	-23	-24	-25	-26
0	-11	-16	-19	-22	-24	-26	-27	-29	-30	-31	-32	-33
-5	-16	-22	-26	-29	-31	-33	-34	-36	-37	-38	-39	-40
-10	-22	-28	-32	-35	-37	-39	-41	-43	-44	-45	-46	-48
-15	-28	-35	-39	-42	-44	-46	-48	-50	-51	-52	-54	-55
-20	-34	-41	-45	-48	-51	-53	-55	-57	-58	-60	-61	-62
-25	-40	-47	-51	-55	-58	-60	-62	-64	-65	-67	-68	-69
-30	-46	-53	-58	-61	-64	-67	-69	-71	-72	-74	-75	-76
-35	-52	-59	-64	-68	-71	-73	-76	-78	-79	-81	-82	-84
-40	-57	-66	-71	-74	-78	-80	-82	-84	-86	-88	-89	-91
-45	-63	-72	-77	-81	-84	-87	-89	-91	-93	-95	-97	-98

Frostbite occurs in 15 minutes or less

$$\text{Wind Chill (}^{\circ}\text{F)} = 35.74 + 0.6215T - 35.75(V^{0.16}) + 0.4275T(V^{0.16})$$

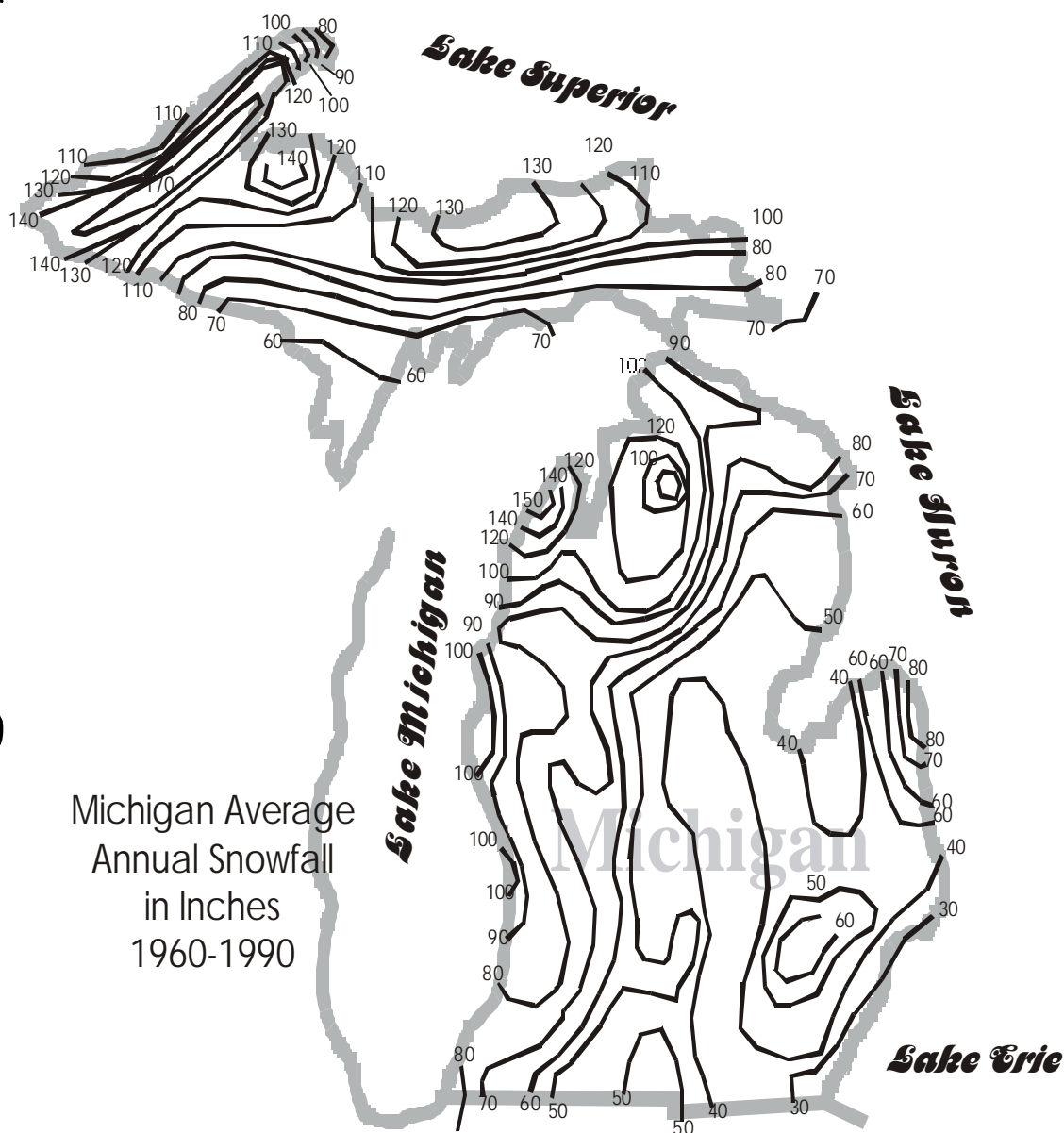
Where, T = Air Temperature ($^{\circ}\text{F}$)
V = Wind Speed (mph)



Average Snowfall Depth

As a result of being surrounded by the Great Lakes, Michigan experiences large differences in snowfall in relatively short distances. The annual mean accumulation ranges from 30 to 170 inches of snow. The highest accumulations are in the northern and western parts of the Upper Peninsula. In Lower Michigan, the highest snowfall accumulations occur near Lake Michigan and in the higher elevations of the northern Lower Michigan.

The snowfall map shows that the western Upper Peninsula experiences the most snowstorms in Michigan each year. The western half of the Lower Peninsula also experiences a relatively large number of snowstorms. One reason for this is the "lake effect" process. Cold winter air moving across Lake Michigan and Lake Superior picks up moisture from the warmer lake waters, resulting in significant snowfall amounts in the western part of the state.





Ice Jams/Flooding

1. What is an ice jam?

Pieces of floating ice carried with a stream's current can accumulate at any obstruction to the stream flow. These ice jams can develop near river bends, mouths of tributaries, points where the river slope decreases, downstream of dams and upstream of bridges or obstructions. The water held back can cause flooding upstream, and if the obstruction suddenly breaks, flash flooding can then occur downstream as well.

2. When is an ice jam likely to occur?

An ice jam can occur anytime from early winter to late spring in Michigan, depending upon changes in temperatures that cause alternate freezing and melting of water surfaces. The most likely times are early winter before the surfaces are completely frozen and early spring when the ice cover begins to break up due to melting.

3. What effect does snow have on flooding potential?

When the snow melts, it adds water to the ground that drains away in the same way as water from rainfall. On average, one inch of fresh snowfall contains about a tenth of an inch of water. However, as snow accumulates and becomes compacted during the winter, the ratio of snow to water decreases. Thus, ten inches of snow remaining on the ground into early spring may contain as much as five inches of water.

4. How fast do the snow and ice melt?

Three days with the maximum temperature of about 50 degrees would create enough melting to cause ice breakup on small streams. That amount of warming would also melt two inches of snow.

5. What happens when rain falls on top of snow?

Air temperature is still the most important factor in melting snow. Rain will usually not add much heat to the process. At 40 degrees, one inch of rain will only produce a tenth of an inch of added water from snow melt. At the same time, frozen ground will result in more of the available water running off directly to streams.

6. What is a Hydrologic Outlook?

A Hydrologic Outlook provides information on hydrometeorological conditions that could cause flooding or impact water supply. This product will typically be issued if precipitation forecasts and/or snowmelt potential indicate the possibility of flooding beyond 36 hours. The Hydrologic Outlook for the spring snowmelt flood potential defines the flood potential from snowmelt based on normal precipitation and rate of melt projected through the normal snowmelt period. If the actual conditions bring more rapid melt or heavier rains than normal, or if ice jams occur, the flood threat would increase substantially. On the other hand, a gradual or intermittent melt, with minimal additional precipitation, would decrease the flood threat.



Ice Jams/Flooding

Outlooks are based on calculation of existing conditions (snow cover, soil conditions, and stream flow) together with predicted future weather conditions. Normal precipitation and snowmelt rates for the future period are presumed in making these projections. An earlier melt than expected may reduce flood potential. Alternatively, if snow persists into late March, the flood potential increases.

The river crest stage values given in the outlooks are only an indication of potential stream crests rather than specific forecasts. An increase in the potential can be expected if above normal precipitation and/or rapid melting develops. Likewise, the potential will decrease if below normal precipitation and/or more gradual melting occurs.

The main factors contributing to spring snowmelt flooding are:

- High soil moisture in the fall
- Significant frost in the ground
- High water content of existing snow cover
- Rapid, continuous melting
- Moderate to heavy rain during melting
- Ice jams

Flood Potential Categories (assume normal precipitation and melt rates):

Low snowmelt flood potential - A general term indicating minimal or no property damage but possibly some public inconvenience.

Moderate snowmelt flood potential - The inundation of secondary roads; transfer to higher elevation necessary to save property, some evacuation may be required.

Major snowmelt flood potential - A general term including extensive inundation and property damage (usually characterized by the evacuation of people and livestock and the closure of both primary and secondary roads).

Severe snowmelt flood potential - Large-scale inundation, requiring substantial resources from outside the local communities; record or near record flooding.

7. When are these outlooks issued?

The 2002 Hydrologic Outlooks for the Spring snowmelt flood potential are tentatively scheduled to be issued February 22 and March 22.

Preventing Frozen Pipes



YOU CAN PREVENT FROZEN PIPES

Frozen pipes aren't just an inconvenience. An average of a quarter-million families have their homes damaged and their lives disrupted each winter...all because of water pipes that freeze.

An eighth-inch (three millimeter) crack in a pipe can spew up to 250 gallons (946 liters) of water a day, wrecking floors, furniture, and personal property. Both plastic (PVC) and copper pipes may burst.

Before the Cold Hits...

INSULATE pipes in crawl spaces and attics. These exposed pipes are most susceptible to freezing. Remember: The more insulation you use, the better protected your pipes will be.

HEAT TAPE or thermostatically-controlled heat cables can be used to wrap pipes. Be sure to use products approved by an independent testing organization, such as Underwriters Laboratories, Inc., and only for the use intended (exterior or interior). Closely follow all manufacturer's installation and operating instructions.

SEAL leaks that allow cold air inside, near where pipes are located. Look for air leaks around electrical wiring, dryer vents and pipes. Use caulk or insulation to keep the cold out and the heat in. With severe wind chill, a tiny opening can let in enough cold air to cause a pipe to freeze.

DISCONNECT garden hoses and, if practical, use an indoor valve to shut off and drain water from pipes leading to outside faucets. This reduces the chance of freezing in the short span of pipe just inside the house.

When the Mercury drops...

A **TRICKLE** of hot and cold water might be all it takes to keep your pipes from freezing. Let warm water drip overnight, preferably from a faucet on an outside wall.

OPEN cabinet doors to allow heat to get to uninsulated pipes under sinks and appliances near exterior walls.

If you're away...

SET the thermostat no lower than 55 (12 degrees Celsius).

ASK a friend or neighbor to check your house daily to make sure it's warm enough to prevent freezing, or...

SHUT OFF and drain the water system. Be aware that if you have a fire protection sprinkler system in your house, it will be deactivated when you shut off the water.

If your pipes freeze...

DON'T TAKE CHANCES. If you turn on your faucets and nothing comes out, leave the faucets turned on and call a plumber. If you detect that your water pipes have frozen and burst, turn off the water at the main shut-off valve in the house; leave the water faucets turned on. (Make sure everyone in your family knows where the water shut-off valve is and how to open and close it.)

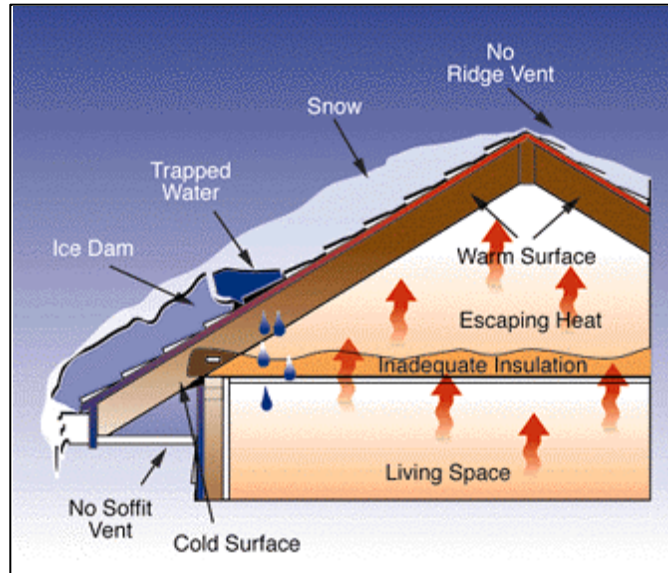
NEVER try to thaw a pipe with a torch or other open flame. Water damage is preferable to fire damage. You may be able to thaw a frozen pipe with the warm air from a hair dryer. Start by warming the pipe as close to the faucet as possible, working toward the coldest section of pipe.

DO NOT use electrical appliances in areas of standing water because you could be electrocuted.



Preventing Roof Ice Dams

Hot Tips for Preventing Cold Weather Damage



Prevent Ice Dams

Ice dams are most common in northern climates. They occur when heavy snow buildup melts during the day and then refreezes when temperatures drop overnight.

After several days of melting-freezing cycles, it's common for the melted water and ice to work up under the shingles until water enters the attic and eventually does damage to the ceilings, wall and contents. In cases where the ice dam goes unnoticed for an extended period of time, it can do significant damage to the building and its contents.

There's no way to guarantee an ice dam won't damage your home, but you can take steps to cut the chances of an ice dam forming in the first place:

- If you haven't already, thoroughly clean all leaves, sticks and other debris from your home's gutters and down spouts. This lets melting roof snow flow into gutters and through down spouts, just as they were designed.
- Make every effort to keep snow on your roof to a minimum. Long-handled devices on the market called "roof rakes" let you stand on the ground and pull the snow off the roof. Keeping heavy snow loads off your roof reduces the chances for both ice dam formation and roof failure due to the weight.
- All winter long, keep gutters and down spouts clear of snow and icicles.
- Evaluate the insulation and ventilation in your attic. Most experts agree the R-value of attic insulation should be at least R-30 (R-38 is preferable in northern climates). In addition, good airflow from under the eaves or soffit area along the underside of the roof and out through the roof vents is essential. The insulation prevents heat loss from the interior of the home. The venting allows the attic air to stay cold enough to prevent or minimize the freeze/thaw cycle on the roof. Consult a reputable roofing and/or insulation contractor about these improvements.



Woodburning Stove Safety Tips

Guide to Woodburners

Woodburners have become the largest source of heating related fires in U.S. homes today. Some major causes of woodburning related fires are:

1. Excessive creosote buildup in the chimney. Creosote is a black substance that resembles a tarlike liquid or small black flakes. Creosote burns easily.
2. Inadequate clearances from the unit to combustibles, such as walls, ceilings, floors and furniture.
3. An improperly installed or poorly maintained chimney.
4. Improper installation and maintenance of the appliance.

Placement of the Woodburner

Proper placement of the woodburner is critical. All woodburners must be installed to comply with local fire/building codes and manufacturer's specifications.

Woodburners must be placed away from combustibles to reduce the chance of a fire.

Chimneys

The Consumer Product Safety Commission estimates that about 45,000 chimney fires occur each year. These fires are often a result of poor maintenance and inadequate cleaning of the chimney.

All chimneys require special care so smoke and flue gases are properly vented. Have your chimney inspected and cleaned before each heating season. Masonry chimneys should have a flue liner to help reduce the possibility of the masonry absorbing the creosote. If your flue liner is damaged or cracked, this could increase the chance of a chimney fire.

Multiple Venting

Only one woodburner or heater should be vented into a single flue. If a woodburner is connected to a flue already used by another heater, serious problems may arise.

Conclusion

Woodburning units must be used carefully. Some basic precautions you should follow when using your unit include:

1. Read the instruction manual that came with your woodburner. If you do not have one, call the manufacturer for a copy.
2. Never use any type of flammable or combustible liquid to start a fire. This includes gasoline, kerosene, lighter fluid and other flammable liquids.
3. Do not burn plastics, garbage, wood that has been treated with a preservative, paint or other chemical.
4. Children should be taught not to touch or play around the stove.
5. Burn wood in your unit according to manufacturer's recommendations.
6. When cleaning ashes out of the unit, put them in a metal container that has a metal lid. Place the container on a concrete floor or other non-combustible surface, away from other combustible materials outside your home. Do not place the ashes in a paper sack or cardboard box; there may still be a hot ember that could ignite the container. Embers may stay hot for several days.



Winter Safety Quiz

Please feel free to reproduce this quiz in whole or part.

1. **If a person is suffering from hypothermia, you should warm the body core first. Warming the extremities first can cause cold blood to rush to the heart and could lead to heart failure.**
 - a) True
 - b) False
2. **If you are stranded in your car during a winter storm, you should do the following:**
 - (a) Run your motor continuously to stay warm as long as possible
 - (b) Run the motor for about 10 minutes every hour for heat
 - (c) Leave the motor off so you won't run out of gas
3. **Which National Weather Service statement has the most dangerous winter storm potential?**
 - a) Winter Storm Warning
 - b) Blizzard Warning
 - c) Freezing rain and freezing drizzle
4. **Which of the following statement relating to deaths due to ice and snow are true?**
 - a) About 70% occur in automobiles
 - b) About 25% are people caught out in the storm
 - c) Majority are males over 40 years old
 - d) All of the above
5. **What is the best type of clothing to wear when you are outside in cold weather?**
 - a) Warm, heavy one-piece coverall such as a snowmobile suit with nothing underneath except light clothing like shorts and short-sleeved T-shirt
 - b) Light-weight clothing so you can move around easily
 - c) Layers of light-weight, loose-fitting clothing that can be removed to avoid overheating and perspiring
6. **If you must travel during a severe winter storm, you should do the following:**
 - a) Carry a cell phone. You can always call for help
 - b) Let someone know your timetable, routes and alternate routes
 - c) Travel late at night to avoid traffic backups

Answers: 1-a; 2-b; 3-b; 4-d; 5-c; 6-b



Committee Contacts

Michigan Committee for Severe Weather Awareness September, 2001

The Committee was formed in 1991 to coordinate public information efforts regarding flood, tornado and winter safety

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2002 Severe Weather Awareness Poster Contest

Sponsored by the Michigan Committee for Severe Weather Awareness



First Prize	\$200 U.S. Savings Bond
Second Prize	\$100 U.S. Savings Bond
Third Prize	\$75 U.S. Savings Bond
Honorable Mention	\$50 U.S. Savings Bond

Eligibility - The contest is open to any Michigan student enrolled in **fourth or fifth grade**.

Deadline - February 2, 2002

Topic - Artwork must illustrate what individuals and families should do to prepare for Michigan severe weather, such as snowstorms, severe cold, tornadoes, thunderstorms, lightning or floods.

The Committee is looking for posters with a **simple, clear message**. Lettering should be easy to read, and artwork should be bright and visible and compliment the message. Winning posters from previous years can be viewed at: www.mspemd.org

OFFICIAL RULES

Who may enter:

Any Michigan student enrolled in fourth or fifth grades during the 2001-2002 school year.

Mailing:

Posters must be packed, wrapped flat and mailed to:
National Weather Service Office
9200 White Lake Road,
White Lake, MI 48386.

Deadline:

Posters must be postmarked on or before February 2, 2002, and Must arrive in the National Weather Service Office no later than February 8, 2002. Winners will be notified by mail no later than March 1, 2002.

Poster Specification:

1. Posters must be submitted on tag, poster or illustration board.
2. The overall dimensions shall be approximately 15" x 20".
3. **All artwork must be original and may be any media desired with the exception of pencil, chalk, charcoal or glitter.**
4. **Stenciled, traced, computer-generated or commercially manufactured stick-on lettering or graphics are prohibited**
5. All posters will become the property of the Michigan Committee for Severe Weather Awareness.
6. Posters will be judged on both the clarity of the preparedness message and the quality of the art. **Posters with misspelled words will be eliminated**

Identification:

(The following information shall be printed on the back of the poster:)

1. Artist's name, age and grade.
2. Artist's home address, telephone number and names of parents.
3. Name, address and telephone number of school.
4. Name of art instructor or classroom teacher, if any.

**For more information, contact: Mark Walton, National Weather Service, 616/949-0643, Ext. 493
Mark Wesley, Emergency Management Division, 517/333-5023**